ATOMIC ENERGY Newsletter

THE FIRST AND ONLY ATOMIC ENERGY NEWS SERVICE

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

August 24th, 1954
Vol. 12...No. 1

Dear Sir:

The revised Atomic Energy Act, subject of much debate in Congress, was passed by the Senate and the House and awaits the President's signature to become law. As finally worked out, patent provisions of the bill, one of its most controversial features, provide compulsory sharing of non-weapons patents developed during the first five years of the new Act, if the USAEC declares the processes or ideas involved to be of "primary importance" in the atomic field. Ideas will not be patentable to a private individual if they were conceived while the inventor was working for or with the USAEC. (See this LETTER 8/10/54: New bill provides opportunities for U.S. industry.)

Vitro Corporation of America has now undertaken a company-financed study of chemical and metallurgical processing problems associated with nuclear power systems. It is the first such study in the chemical and metallurgical field under the USAEC's Industrial Participation Program for development of competitive nuclear power. The investigations, to be carried out by Vitro's Engineering Division, will include preparation of fuel, removal of fission products poisons, primary separation of material discharged from the reactor, recovery and reworking of unspent fuel, recovery and decontamination of fissionable material produced in reactors, and radioactive waste disposal. The USAEC will make available to Vitro information and consultation services. From its studies, Vitro will select one or more processing concepts for engineering analysis and preliminary design studies. It will then make an estimate of processing costs as related to the overall nuclear power economics.

A symposium on Radiation Sterilization of Foods and Pharmaceuticals, which will occupy one day of the 126th National Meeting, American Chemical Society, being held in New York Sept. 12-17, will hear some 11 papers. Topics to be covered include: Principles of the Radiation Chemistry of Sterilization; Mechanism of Irradiation Effects in Polyethylene; Chemical and Bacteriological Effects of Gamma Radiation on Meat; Effects of Ionizing Radiations on Solutions of Cysteine and Inositol; and others. (The complete meeting program may be obtained from ACS headquarters, 1155 16th St., N. W., Wash., D. C.)

With the recent renewal of physical research contracts, and the issuance of new ones, between the USAEC and universities and private research organizations, the large extent to which the USAEC finances physical research in the United States is again emphasized. An examination of some of these contracts, totalling 70, which recently were awarded, shows that at California Institute of Technology a High Energy Physics program under R. F. Bacher will receive $375,000 from the USAEC; at Columbia University a program in Neutron Spectroscopy and Nuclear Physics under W. W. Havens will receive $562,000; at the University of Minnesota a study involving a 60 Mev Proton Linac under J. H. Williams will receive $171,000; and at the University of Notre Dame, Studies in Radiation Chemistry under M. Burton will receive $202,000.

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BUSINESS NEWS... in the atomic energy field...

BIDS ASKED ON NUCLEAR REACTOR PROTOTYPE:-For the first time in the United States, competitive proposals are being sought on the development, engineering, design and construction of a nuclear power reactor; the job will be a joint project of the Department of Defense and USAEC. In this project, some 33 U. S. companies have been asked to submit such proposals for an experimental, full-scale but small nuclear power plant to be erected at the Engineer Research and Development Laboratories, Fort Belvoir, Va. The plant is the prototype of a "package" or transportable power reactor which is desired by the Army Corps of Engineers for use at remote bases, possibly eliminating the need to transport bulky conventional fuels. The plant, with a capacity of approximately 1700-kw. of electrical energy, will be built of components that can be carried in an aircraft. This prototype model will be a pressurized light water reactor. Lump sum bids for design and construction of the reactor, associated pumps, heat exchangers, turbine and generator and other equipment, must be submitted by competing companies within 90 days so that the USAEC may award a design and construction contract this Fall. The contract will be awarded (according to the USAEC) to the company which submits the proposal most favorable to the Government from the standpoint of price, excellence of design, and responsiveness to certain other aspects of the invitation. (First requests for expressions of interest by U. S. firms in this project were made last Spring; this LETTER, March 23rd, 1954, page 1 and June 1st, 1954, page 2. Of the companies that expressed definite interest, several were advised by a USAEC contractor selection board that they lacked the qualifications and experience adequate to undertake the prime contractorship. The remaining firms or groups were then sent invitations to submit lump-sum proposals for the project.)

NEW FIRM ENTERS NUCLEAR FIELD:-A new company with Gordon Dean (former chairman of the USAEC) as chairman of its board of directors has now been formed with headquarters in Pittsburgh, Pa., to provide technical services to firms engaged in nuclear power development and to industries interested in the application of radioactivity to industrial products and processes. The new enterprise will be known as Nuclear Science & Engineering Corp., and according to Mr. Dean will be the first company of its kind in the atomic energy field. He feels that it will supplement two growing groups of enterprises already in the nuclear field, viz., those engaged in nuclear reactor design and engineering, and those which manufacture radiation detection instruments.

Lehman Brothers, investment banking firm, participated in setting up the new organization. American Metals Co., Ltd., and Ketay Manufacturing Co., both of New York, have subscribed for a substantial portion of the capital stock of the new venture. According to Ronald A. Brightsen, who is to be president of Nuclear Science, the company will provide firms active in atomic power with a variety of services, including radiation measurements, analyses, testing, consulting, design, research, and development. Mr. Brightsen, who was formerly with the atomic power division of Westinghouse Electric Corp., said that Nuclear Science will give vigorous assistance to private industry in expanding the applications of nuclear techniques which promise to improve both the efficiency of industrial processes and the quality of the resulting products. He feels the potential market in this field embraces the entire chemical industry, steel, petroleum, glass, non-ferrous metals, coal, plastics, and pharmaceuticals, with applications in other industries still unexplored.

ON THE FINANCIAL SIDE: A new stock flotation this month by Atomic Instrument Co., Boston, of approximately 51,000 shares, will yield that firm additional working capital. (The company has expanded into industrial counting and process control instruments; and into the field of special data calculating instruments.).....General Dynamics Corp. has now reported to its stockholders that it registered higher earnings for the six month period ending last June 30 than for any other comparable period in its history. (Its subsidiary, Electric Boat Div., is now negotiating with the U. S. Navy a contract for design and construction of a third nuclear powered submarine. Meanwhile, at Electric Boat, work continues on the Sea Wolf, the second nuclear powered underseas craft, while the Nautilus, which it produced, the first such nuclear craft is being outfitted for sea trials.)

NUCLEAR EQUIPMENT NEWS...for plant and laboratory...

SPECIAL UNIT CONSTRUCTED FOR NUCLEAR POWERED SUBMARINE:-A unit for the removal of carbon dioxide from the atmosphere of the nuclear powered submarine Nautilus, which was built by The Girdler Corp., Louisville, Ky., is designed around Girdler's standard Girbotol process. For this particular application, Girdler undertook research leading to the solution of difficulties formerly experienced with amine absorbents in the presence of oxygen, since the submarine's atmosphere would have a relatively high concentration of oxygen along with the contaminating carbon dioxide. In operation, the air of the submarine is passed through an absorber column where it meets a countercurrent stream of the absorbing medium; this removes the carbon dioxide. The absorbent is then reactivated in a separate vessel and recycled. The carbon dioxide is released from the reactivator by the application of heat in the reboiler. It is then exhausted into the sea where it dissolves; it does not leave bubbles which might reveal the position of the craft. The unit, the company points out, has a high capacity for absorption of carbon dioxide in relation to the size and weight of the apparatus and the volume of the absorbent used. The unit was fabricated mainly of thin-wall stainless steel, with some portions of copper-nickel alloy.

BIDS ASKED ON EXHAUST SYSTEM AT NUCLEAR AIRCRAFT ENGINE TEST AREA:-At its nuclear reactor testing station (Idaho Falls, Idaho) the USAEC has now asked for bids for construction of an exhaust system for the initial engine test area of the aircraft project there. The work, which will be done under contract AT (10-0)-695, is estimated to cost approximately $250,000. Specifications may now be obtained for this work from the USAEC's Idaho operations office, Idaho Falls.

RAW MATERIALS...for nuclear work...

UNITED STATES:-Construction of a concentrating plant to produce commercial grades of thorium concentrates from domestic thorite ores is planned by Colonial Uranium Co., of Grand Junction, Colo., an official of that company has now stated. Robert Ludwig, president of Colonial, said that more than two years of metallurgical research have gone into the process to be used in the Colonial mill. (Colonial Uranium owns and controls a considerable acreage in Gunnison county, Colo., believed to have considerable potential as a thorium producing property. The company also owns substantial stock in Rare Earths Mining Co., a firm in which Lindsay Chemical Co., and Climax Molybdenum Co., own the remaining stock. In addition, the Colorado Thorium & Metals Co. is a wholly-owned subsidiary of Climax and Colonial.) ..... Norbute Corp., of Butte, Mont., a one-time copper producer, has entered the uranium field by acquiring properties in the Colorado Plateau area. L. L. Steindler, vice president of Norbute, said the company has under option 150 uranium claims near Moab, Utah, and some 23,000 acres of leases in Wyoming. (Norbute is the successor company to North Butte Mining Co., formed in 1905; it mined copper, zinc, silver and gold. From 1947 until June, 1953, it was generally inactive. In that month, William Zeckendorf, president of Webb & Knapp, New York real estate firm, acquired an interest in Norbute making him the major stockholder, and a director; Webb & Knapp do not own stock in Norbute.)

PORTUGAL:-The Portuguese Nuclear Energy Board has now ruled that beryllium, tantalite, and zircon are to be considered minerals subject to its control, and under the same restrictions as to export, etc., as radioactive minerals. (Figures released in Portugal show that the production of beryllium in that country increased from 93 tons in 1952 to 378 tons in 1953, with increased amounts forecast for this year.)

NEW BOOKS & OTHER PUBLICATIONS... on nuclear subjects...

Prospecting With a Counter--Supt. of Docs., Wash. 25, D. C. (25¢)

Experiments With Atomics. (Popular approach)-Thomas Y. Crowell Co., N.Y.($2.50)

Boral, New Thermal Neutron Shield. (AECD-3625) (35¢)...Uranium & Its Compounds; A Bibliography (1789-1950) (K-295,pt.2) ($3.45)--Oak Ridge Nat. Lab., Oak Ridge, Tenn.

Air Contamination & Respiratory Protection in Radioisotope Work. (25¢)--Isotopes Div., Oak Ridge Operations Office, Oak Ridge, Tenn.

ACCOMPLISHMENTS IN ATOMIC ENERGY: Condensation of an address by Lewis L. Strauss, Chairman, USAEC, to the Veterans of Foreign Wars, Aug. 5, 1954, Philadelphia, Pa.

I propose to report to you briefly on what the U. S. Atomic Energy Commission has accomplished since its establishment some 8 years ago.

Weapon development, of course, has had highest priority, and it has cost by long odds the most money. Our largest budget for new plants was met by appropriations in 1952, and some of these great new facilities have already begun operations. We are now spending on construction alone something like $115,000,000 each month, and our operating expenses will reach approximately $1 billion in the current fiscal year. When the present building program is finished, there will be about $8.5 billion invested in new plants. We have used our billions to build a capital plant and to stockpile uranium, plutonium, and other special materials as enormous reserves (for weapons) which may ultimately return their cost to us in the production of useful electrical energy.

With this fiscal outline as a background, let me tell you about the weapons program. Since the first test explosion in New Mexico in 1945, we have had more than 40 experimental detonations and an entire range of atomic weapons has been developed. These are adapted for use by all branches of the Armed Services, in many kinds of applications on land, sea, and air. Our stockpiles are growing rapidly. We have stepped up the destructive power of single atomic bombs by more than 25 times that of the first such weapon. Yet the most modern atomic bomb is a pigmy in comparison with thermonuclear weapons.

Leaving the weapons field, we find that although it has been less than 12-years since the power of the atom was harnessed within a nuclear reactor, we have already made tremendous progress in research and development in connection with agriculture, chemistry, metallurgy, biology, medicine and other areas of science and industry. This is being accomplished by radioisotopes; the uses of such isotopes are increasing from month to month--last year over 12,000 shipments of radioactive and stable isotopes were made from Oak Ridge.

Among the peaceful uses of atomic energy, the development of nuclear power has been second only to the weapons program. Our first success in this field was in December, 1951, when we proved that the heat generated in a reactor could be taken out safely and used to produce electrical energy. Last Summer (1953) the first full-size nuclear power plant was completed and operated at full power. This reactor was the prototype of the one now installed in the first nuclear-powered submarine, the Nautilus. The amount of power in the Nautilus is classified information, but any modern submarine capable of operating with the Fleet at sea must have reliable power, and lots of it.

As to stationary nuclear power plants, some engineer-economists foresee that by 1960 perhaps 10% of the new power plants on the drawing boards will have specifications for nuclear reactors, instead of coal, oil, or gas fired boilers. These same experts say that by 1980 perhaps half of the new plants will use fissionable materials as fuel. However, I think these forecasts are too conservative.

My comments about nuclear power have been confined to the prospects for its development in our own country. However, in many other nations, the need for supplementary fuel is more urgent than here. The growing need for power generation, together with the rising demand for fuel for transportation and industry, is putting more and more pressure on the energy resources of many nations. Among consuming nations able to meet less than one-half of their consumption of coal and oil from sources within their own borders are Italy, Portugal, Greece, Norway, Sweden, Denmark, Finland, Argentina, Algeria, French Morocco, Ceylon and Pakistan. In view of the potential importance of nuclear power as a supplementary world-wide source of energy, the progress of the United States in our development program can be significant for other nations as well as for ourselves.

I would like to conclude these remarks with a personal statement of faith. I have an abiding faith that Providence intends that the release of the energy in the atom, through the instrumentality of man's efforts and genius, should be used to promote peace on earth and good will among men. Had I not always believed that the beneficent applications of atomic energy would transcend the temporary destructive uses of it, I would not have taken my small part in this momentous development.

ATOMIC PATENT DIGEST...latest U. S. grants and licenses available...

PATENTS AVAILABLE FOR LICENSE:- A new group of 25 patented inventions, developed in the course of nuclear research, and owned by the U. S. Government (USAEC-assigned) are now available for royalty-free licensing (non-exclusive). Information on this new group (as well as on the 679 USAEC-assigned inventions previously made so available) may be obtained from Patent Branch, USAEC, Wash. 25, D.C. This newly released list with identifying U.S. patent numbers comprises: (1) Apparatus for electrochemical analysis of electrolytic solutions, which automatically produces a visual polarogram. No. 2,680,227. (2) Apparatus and method for detecting neutrons utilizing scintillation material and light detecting apparatus. No. 2,681,416. (3) Recovery of heavy water from solutions or slurries of uranium compositions and heavy water used as the reactive composition in a neutronic reactor. No. 2,681,883. (4) Method of purifying flavonoids so that the pure flavonoids may be separated in relatively concentrated form from extraneous organic and inorganic impurities. No. 2,681,907. (5) Compounds of a new valence state of the element americium. No. 2, 681,923. (6) Shipping containers and cans for transporting radioactive material. No. 2,682,352. (7) Electronic controlled gas pumping system of the toepler type. No. 2,682,364. (8) Distillation apparatus particularly useful in producing and purifying chlorides of uranium. No. 2,682,451. (9) Multi-stage countercurrent extraction apparatus. No. 2,682,452. (10) Colormetric dosimeter for measurement of X-ray or gamma radiation. No. 2,682,510. (11) Electrical switches adapted to be used in radiation dosimeters. No. 2,682,583. (12) Apparatus for producing a continuous supply of ions of metals and the compounds of metals. No. 2,682,611. (13) Device for inserting and withdrawing a control element in a neutronic reactor. No. 2,682,785. (14) Method of and apparatus for investigating the energy spectrum of a beam of neutrons, or other radioactive radiations. No. 2,683,221. (15) Simple, inexpensive radiation meter requiring no auxiliary power supply. No. 2,683,222. (16) Liquid composition useful in a transparent shielding window against radioactivity. No, 2,683,650. (17) Separation of americium and curium values contained in acqueous solutions. No. 2,683,655. (18) Variable voltage wave form generator. No. 2,683,807. (19) Ion beam energy measuring device. No. 2,683,814. (20) Means for isolating objects from shocks or vibration. No. 2,684,825. (21) Method and means for measuring and analyzing radioactivity which decays rapidly. No. 2,685,027. (22) Process for preparing boron by the reduction of a boron halide with alkali metal. No. 2,685,501. (23) Adjustable frequency shake table capable of large excursions with small input energies. No. 2,686,427. (24) Water cooled insulator designed for severe service. No. 2,686,827. (25) Improved time of flight isotope separator of the linear type. No. 2,686,880.

PATENTS GRANTED:- Method of logging a steel cased bore hole containing drilling mud to determine the absolute gamma radioactivity of the formations traversed by the bore hole. Comprises (in part) passing a gamma ray detector of the pulse-producing type through such a hole and recording the counting rate of the pulses produced due to the total radioactivity of the material surrounding the detector; immersing the detector in a mass of the drilling mud having a thickness of at least one foot around the detector to determine the absolute natural gamma radioactivity of the mud; and from this figure, after applying corrections, determining the absolute radioactivity of the borehole. U.S. Pat. No. 2,686,881 issued Aug. 17, 1954; assigned to The Texas Co., New York, N.Y. (Inventors: G. Herzog and A. S. McKay.)

Space charge controlled X-ray tube. Comprises an envelope, cooperating spaced apart anode and cathode elements mounted within this envelope, a focusing cup defining element, and a grid element consisting of relatively fine parallel wires. These wires extend in a direction at right angles to the longitudinal direction of the cathode filament. Means are provided for connecting separate biasing potentials to the focusing cup and the grid element. U.S. Pat. No. 2,686,884 issued Aug. 17, 1954; assigned to Dunlee Corp., Chicago, Ill. (Inventor: Z. J. Atlee.)

Sincerely,

The Staff,
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